



Operation Bull's Eye – Year 2 Report

Introduction

In May 2006, the Special Projects Unit of the Durham Police Department requested assistance from the Crime Analysis Unit in determining the densest two square mile area in the City for “Sound of Shots” calls for serviceⁱ. When police data was analyzed for a one-year period from May 1, 2006 to April 30, 2007 it was discovered there was a spatial correlation between shots fired calls, violent gun crimes and validated gang members, and a disproportionate number in all three categories was located in a similar area of East Durham.

In response, the Police Department committed to focusing on the area for a one-year period from August 1, 2007 to July 31, 2008. Called “Operation Bull’s Eye,” the primary goal of the initiative was to reduce violent gun crimes. Although shots fired calls for service remained relatively unchanged, such crimes dropped 29.4 percent overall from 184 to 130 incidents.

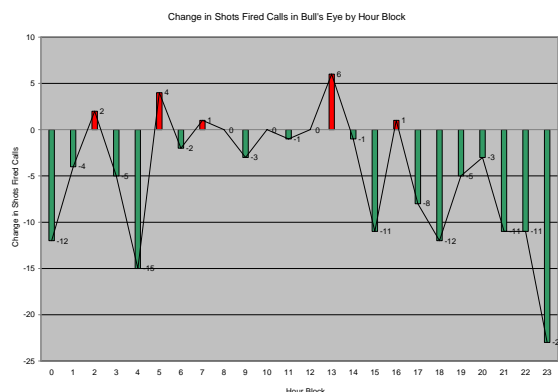
Primarily because of this success, the need for additional enforcement, and awarding of a Comprehensive Anti-Gang Initiative (CAGI) grant, the Department continued its efforts for a second year. Additional reductions in violent gun crimes were observed, with 113 reported incidents from August 1, 2008 to July 31, 2009.

The purpose of this report is simply to compare calls for service and violent crimes during the initiative with the original study period, and is not meant to be a comprehensive review of the totality of police activity in the area, or the efforts of other organizations. Rather, this is snapshot in an ongoing effort that will continue for several years on numerous fronts.

Calls for Service

For May’06-Apr’07, hereinafter referred to as the *Study Period*, there were 2,653 total shots fired calls citywide, with 455 (17.15%) occurring in the Bull’s Eye. For Aug’08-Jul’09, hereinafter referred to as *Year 2 Operations*, there were 2,557 events citywide and 342 (13.38%) in the Bull’s Eye. Compared to *Year 1 Operations*, when there was virtually no change in the target area, there was a 24.8 percent decrease during Year 2.

	Shots Fired CFS		
	Target Area	Buffer Area	Citywide
Study Period	455	185	2653
Year 1 Operations	457	223	3061
Year 2 Operations	342	168	2557
Percent Change	-24.84%	-9.19%	-3.62%



In order to identify possible displacement, a 1000' buffer was established around the target area. Compared to *Year 1 Operations*, when shots fired calls increased 20.5 percent in the buffer area, there was a 9.2 percent decrease during Year 2. Citywide, there was a 3.6 percent decrease during Year 2 compared to the *Study Period*. The change in shots fired calls for service in the target area measured statistically significantⁱⁱ, and there was a diffusion of benefits into the buffer area in Year 2,

rather than the modest displacement observed during Year 1. The area of highest density remained in East Durham, shifting almost due North by 4,285 feet and decreasing from 488 events to 399 events.

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When shots fired calls in the Bull's Eye were broken down by hour block for the *Study Period*, the four-hour period from 8pm to midnight was the most active with 49% of the call volume. During *Year 2 Operations*, these hours had 49 fewer total calls, and 19 of the 24 hour blocks in the day experienced an overall decrease in activity.

Data on shots fired calls must be carefully considered due to several factors. First, it is a fairly generic category, reported almost entirely via phone calls from the public (vs. self initiated). Second, it is difficult to confirm what the caller heard was indeed a firearm being discharged or some other sound, such as firecrackers or a vehicle backfiring.

There are other “quality-of-life” issues in the community more easily measured, such as prostitution and drug calls for service. When these types of calls are generated by the public, they are more specific and usually based on observation by the caller, rather than sound. Therefore, it is worth looking at changes in these calls between the study and operation periods.

Non self-initiated prostitution calls for service in the Bull's Eye dropped from 189 during the *Study Period* to 96 during *Year 2 Operations*, a 49.2 percent decline. However, the buffer area experienced an increase of 46 such calls, the only measure to show an increase during Year 2. This is not believed to be merely a displacement effect, as there were two specific locations responsible for the majority of the increase, as opposed to spread throughout the buffer area. Nonetheless, the changes in the Bull's Eye did measure statistically significant, meaning it is highly unlikely the decline in the target area was just random chanceⁱⁱⁱ, some outside factor such as the Bull's Eye operation was responsible.

	Prostitution (not self-initiated)		
	Target Area	Buffer Area	Citywide
Study Period	189	31	350
Year 1 Operation	109	41	274
Year 2 Operation	96	77	252
Percent Change	-49.21%	148.39%	-28.00%

Non self-initiated drugs calls for service in the Bull's Eye dropped from 878 during the *Study Period* to 621 during *Year 2 Operations*, a 29.3 percent decline. In the buffer area, there was a 14.9 percent decrease in such calls during Year 2, compared to a 6.5 percent increase during *Year 1 Operations*. Citywide, there was a 13.6 percent decrease during Year 2 compared to the *Study Period*, indicating the change in the Bull's Eye was statistically significant^{iv}, and there was a diffusion of benefits into the buffer area, rather than the modest displacement observed during Year 1. This is consistent with most of the other measures observed and likely a result of not just additional patrols, but continued drug market intervention efforts by the Department's Special Operations Division.

	Drugs (not self-initiated)		
	Target Area	Buffer Area	Citywide
Study Period	878	355	2826
Year 1 Operation	803	378	3096
Year 2 Operation	621	302	2443
Percent Change	-29.27%	-14.93%	-13.55%

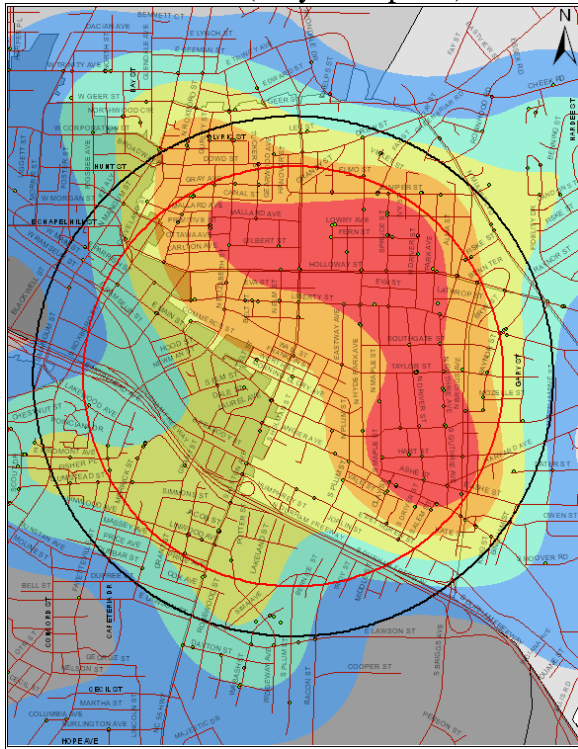
Violent Crimes

For the *Study Period*, there were 929 total violent gun crime incidents citywide, with 184 (19.81%) occurring in the Bull's Eye target area. For *Year 1 Operations*, there were 851 incidents citywide and 130 (15.28%) in the Bull's Eye. For *Year 2 Operations*, there were 770 incidents citywide and 113 (14.68%) in the Bull's Eye. While such crimes are down 17.1 percent citywide, they are down 38.6 percent in the target area, which is continuing to be a less concentrated area of gun violence within the City. As opposed to the *Study Period*, when kernel density analysis revealed only one “hot spot” located across a large area of the target area, only two small spots now appear on the fringes in the buffer area.

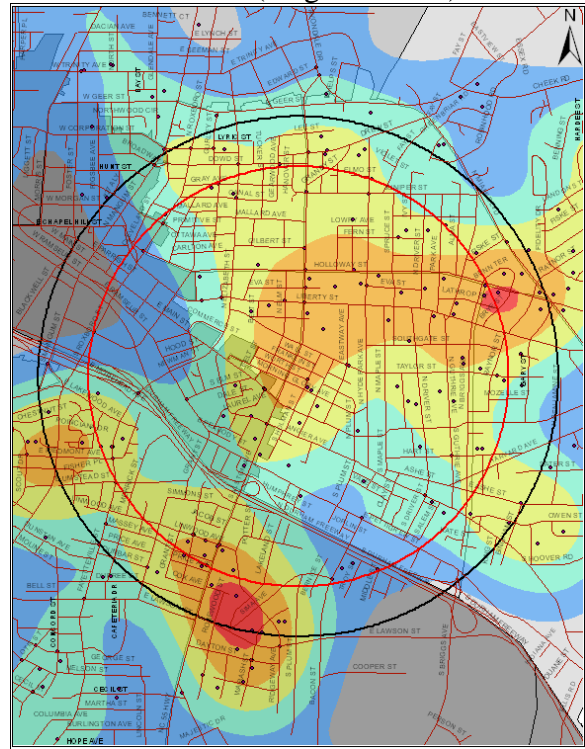
	Violent Gun Crimes		
	Target Area	Buffer Area	Citywide
Study Period	184	57	929
Year 1 Operation	130	79	851
Year 2 Operation	113	43	770
Percent Change	-38.59%	-24.56%	-17.12%

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Before (May 06-Apr 07)



After (Aug 08-Jul 09)



In order to identify possible displacement, a 1000' buffer was established around the Bull's Eye. While violent gun crimes increased 38.6 percent in this area during Year 1, there was a 24.6 percent decline during Year 2, indicating the change in the Bull's Eye was statistically significant^v, and there was a diffusion of benefits into the buffer area, rather than the displacement observed during Year 1. The area of highest density remained in East Durham, shifting Northeast by 2,579 feet and decreasing from 184 events to 116 events.

In contrasting gun-related violent crimes with all violent crimes, the decline in the target area showed an even higher level of statistical significance^{vi}. Although it did not outperform the City, such crimes also declined in the buffer area by 6.1 percent, compared to the modest displacement observed during Year 1.

	All Violent Crimes		
	Target Area	Buffer Area	Citywide
Study Period	339	115	1748
Year 1 Operation	243	137	1653
Year 2 Operation	221	108	1558
Percent Change	-34.81%	-6.09%	-10.87%

UNC Partnership

During the course of Operation Bull's Eye, the Durham Police Department has collaborated with the Department of City and Regional Planning at the University of North Carolina at Chapel Hill on a couple different projects. Foremost was a survey conducted in the target area, designed by faculty and graduate students at UNC, and executed by members of the Police Department's Community Services Unit. At the outset of Bull's Eye, the same personnel went door-to-door at each of the 3,418 addresses in the target area to explain the initiative. Of the 1,956 addresses that were identified as inhabited, 500 were randomly selected for the survey, which consisted of 54 questions and took about 20-30 minutes each to finish. About 200 surveys were completed, resulting in roughly a 40% return rate.

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Although the final results and analysis of the survey has not yet been completed, a couple of early tabulations are worth mentioning. When asked to identify whether 25 different issues were a major, minor or not a problem in their current neighborhood, the following categories were reported the most frequently as being a major problem by respondents: gun shots, loitering, people using drugs, people selling drugs, and unemployment. There was also a significant difference in perception of safety while walking outside, with 82% of respondents feeling safe during the day, but only 40% feeling safe at night.

Next Steps

There is compelling statistical evidence to conclude suppression efforts and weeding activities have positively impacted the community in the Bull's Eye area. However, long-term success requires more than just a police response or short-term Band-Aid approach. Ongoing efforts include continuation of a three-year comprehensive anti-gang initiative grant through the Department of Justice, a systematic rental inspection program by the Department of Neighborhood Improvement Services, and community partnerships. Graduate students at the UNC Department of City and Regional Planning also recently presented a revitalization plan for six neighborhoods in Northeast Central Durham^{vii}, which is currently being studied.

ⁱ Two square miles was selected because the Special Projects Unit was investigating the viability of gunshot detection systems. Designs for such systems start at this scale.

ⁱⁱ H_0 Operation Bull's Eye will have no impact on shots fired calls for service in the target area. H_1 Operation Bull's Eye will have an impact on shots fired calls for service in the target area. To determine the probability that rejecting the null hypothesis in favor of the alternative hypothesis would be erroneous, Chi Square (15.36) was calculated, resulting in a $p < 0.001$ significance value.

ⁱⁱⁱ For non-self initiated prostitution calls, the Chi Square statistic was beyond measure (positive) and the probability of erroneously rejecting the null hypothesis resulted in a $p < .001$ significance value (4.39615e-11).

^{iv} For non-self initiated drug calls, the Chi Square statistic was 22.33 and the probability of erroneously rejecting the null hypothesis resulted in a $p < .001$ significance value.

^v For violent gun crimes, the Chi Square statistic was 8.33 and the probability of erroneously rejecting the null hypothesis resulted in a $p = .016$ significance value.

^{vi} For all violent crimes, the Chi Square statistic was 15.89 and the probability of erroneously rejecting the null hypothesis resulted in a $p < .001$ significance value.

^{vii} Available at http://www.durhamnc.gov/departments/nis/necd/pdf/necd_gen_plan.pdf.